

KANGAROO

and his

KIN



By **CHARLES BARRETT, F.R.Z.S.**

26 ILLUSTRATIONS

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KANGAROO

AND HIS KIN

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SPOILING FOR A FIGHT: RED
KANGAROO

KANGAROO

AND HIS KIN

CHARLES BARRETT, F.R.Z.S.

1943

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VERY EARLY
PORTRAIT OF A
KANGAROO.
PUBLISHED IN
1802

(BELOW)
WALLABIES AT
HOME





PALM VALLEY: A HAUNT OF THE EURO

KANGAROO LAND

Though millions of kangaroos have been killed for the sake of their pelts, or as pests on pastoral land and in agricultural areas, Australia remains Kangaroo Land. For our national animal still abounds over great tracts of untamed country, and is plentiful in districts where settlement has not claimed much of the territory that for ages belonged to Wild Nature and the aborigines. Even in the neighborhood of townships and country towns, kangaroos may be seen. They have no friends among farmers; wheatgrowers especially regarding them as enemies.

Kangaroos do raid crops, causing much destruction; while on the big stations they compete with sheep and cattle for the pasture. For this reason they were persecuted long before kangaroo pelts had any market value: almost from the earliest days of settlement. In more recent years the war against kangaroos and wallabies has been waged relentlessly, not only to rid the land of hungry marsupial mouths, but also for gain: skins are worth money, and numbers of men earn a good living as kangaroo hunters. Times have changed since the "Old Bushman," whose book of "Bush Wanderings" gives the best early account of animal life in Victoria, shot kangaroos and other game for the Melbourne market, in the fifties of last century. Dealers grumbled at paying one shilling and sixpence for a good skin, while kangaroo meat was valued little more than carrion. Yet kangaroo tail soup nowadays is regarded as excellent bush tucker, while many a camper short of rations is glad to eat kangaroo steaks.

Where, about ninety years ago, more than two thousand kangaroos were shot during two seasons, in a very limited area within twenty miles of Melbourne, a wallaby may still be seen occasionally, but the big marsupials long since disappeared from that coastal country, and indeed from the greater part of Victoria, where they have enjoyed a fair measure of protection for a long time now. When they increase to the extent of becoming a nuisance in any district, permits to destroy a limited number are granted by the Fisheries and Game Department.

Kangaroos are much more numerous in other States than in Victoria; with the result that kangaroo hunters operate in Queensland, New South Wales, and Western Australia. Their occupation has gone in the smallest mainland State, which, however, at fairly long intervals has allowed possums to be snared in tens of thousands during open seasons, despite the protests of naturalists and nature lovers. Rigid protection for koalas came almost too late to save those lovable little fur-bearers from extinction in Victoria, after they had gone from New South Wales and South Australia.

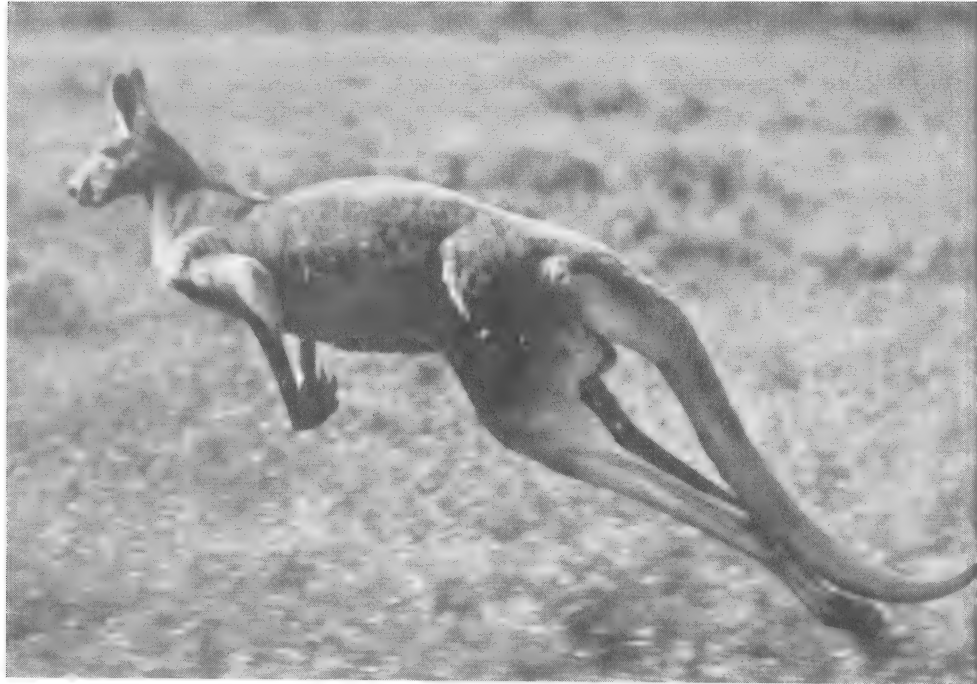
Queensland has been too careless of her wild animal heritage, and far too generous to pelt hunters. Not so many years ago, an open season for koalas was declared by the Government, and many thousands of native bears were killed. It is recorded that during a quarter of a century (1887 to 1902) the Queensland Government paid bounty money on the scalps of nearly seven and one half million kangaroos and wallabies. On one station alone the tally for six months was 60,000 scalps. These destruction figures give an indication of the vastness of the marsupial population in the North after more than half a century of persecution. Some millions, mostly wallabies, may still exist in the northern half of Australia, but their numbers are decreasing wherever sheep or cattle roam. Unless more protection is given to it, the kangaroo within a century may become as scarce, except in the unsettled Centre and the Far North, as the American bison, which once roamed the prairies in such immense herds that they darkened the face of the earth. Now a few thousands are guarded as national animals. Australia should learn a lesson from the United States, which is doing more than most other countries to conserve native animal life.

Not all of Kangaroo Land's own people have seen kangaroos in the wilds; thousands of city bred folk are content with close-up views of marsupials in Zoo enclosures. But visitors from overseas are eager to meet our world famous animals in their native haunts.

Grass-eating wild animals are disappearing as their territory becomes stocked with flocks and herds. Some pastoralists do not mind a reasonable number of kangaroos living on their holdings; others hate to see even a few in their biggest paddock. Pastoralists and farmers have ever been the worst enemies of Kangaroo and his Kin. They are in favor of wholesale destruction; but there is a good case for partial protection. Many unprejudiced Australians, including naturalists, urge this, claiming that ceaseless war against kangaroos has failed



MOTHER AND "JOEY"



GRACE AND SPEED: RED KANGAROO *Austln. Natnl. Publicity At*

GREY KANGAROOS AT FULL SPEED *Austln. Natnl. Publicity At*



to achieve its main object. Two leading authorities, the late Professor A. H. S. Lucas, and the late W. H. D. Le Soeuf (former director of Melbourne Zoological Gardens), make this statement in their standard work, "The Animals of Australia": "In many districts the slaughter of their natural prey had turned the attention of the dingo to the sheep, and when once a dingo has tasted sheep he is henceforth contemptuous of kangaroo."

Dingoes, the wild dogs of Australia, of course are notorious sheep killers, and take heavy toll of the flocks. They have been even more ruthlessly persecuted than Kangaroo and his Kin, yet they are as plentiful as ever in many parts of their range. The kangaroo is a simpleton compared with the dingo, which often is cunning enough to avoid traps and sniff contemptuously at poison baits. His chance of survival for centuries to come are much brighter than those of the kangaroo. The warrigal — a blackfellow name for the dingo — is so numerous in part of Western Australia, that some trappers, or "doggers," as they are called, earn £10 or more weekly; occasionally several times as much. The bounty paid for each "kill" (scalp and tail must be produced as proof) may be £3: it varies in different districts and States, but £1 is near the minimum. Dingoes still prey upon marsupials, but undoubtedly the wholesale destruction of kangaroos and wallabies has tended to make the warrigal a sheep killer.

The aborigines never were numerous enough to act as a serious check upon the increase of kangaroos and their small first cousins, the wallabies. This is evident from present conditions in the wild North, where thousands of blacks still live the semi-nomadic life of hunters and food gatherers, and take constant toll of marsupial life. Wallabies exist in countless numbers in North Australia, while mobs of kangaroos often are seen. Since the era of big cattle runs came of age, as it were, there has been a decrease in the kangaroo population of the North, but not in the great aboriginal reserves, nor in the wildest station areas. North Australia will remain Kangaroo Land long after kangaroos have gone from all but a few provinces of their southern territory.

From the "Dream Time," the era of their legendary ancestors, the kangaroo has been associated with the aborigines. It is one of their many totemic animals, and, as such, is forbidden food to those whose totem it happens to be. The kangaroo figures in myths and legends; it is depicted in aboriginal "art galleries"; painted on the walls of caves and shelters, and carved in the living rock. Some of these portraits are as crude

as a child's first efforts at "drawing a man"; others are skilfully done, some indeed being nearer to Nature than pictures of kangaroos done by European artists, who seldom are good observers of wild animal life. Many of these petroglyphs are pecked out — the whole figure being pitted; others are merely outlines, but cleverly done.

At Mootwingee, in north-western New South Wales, there are innumerable rock carvings on flat, and sloping rock faces; while a huge shallow cave, used by the natives as a shelter, has its weather-polished walls decorated with paintings, one representing a giant serpent. Here, too, are many "red hands." One petroglyph, whose age is estimated to be between five thousand and ten thousand years, represents emu footprints. Nearby is a wonderful pecked-out figure of a kangaroo, a masterpiece of rock carving.

Kangaroo flesh has always been blackfellow tucker all over Australia, and still is a regular item on the menu up North. Vanished tribes of the south wore kangaroo-skin cloaks. Leg bones are used for various purposes; for example, punches (for punching holes in skins) were made out of them; and needles, tendons of the hind legs and the tail being used as thread. Kangaroo-bone nose ornaments are, or were, the fashion among some tribes; while the lubras and gins wore necklaces of the incisor teeth sewn to long strips of softened kangaroo skin with tail-sinew thread.

Kangaroo corroborees are held by some of the tribes. One of the most impressive is that performed by Bathurst and Melville Islanders, and well described by the late Dr. Herbert Basedow, in "The Australian Aboriginal." As soon as the Kangaroo Ceremony has been announced, one or two men jump into the cleared space and each assumes a posture resembling as far as possible that of a kangaroo. Their legs are bent at the knees, and their arms held forward, vertically at the elbows. They hop or jump around the corroboree ground, faces turned downwards as if their owners are looking for food. They scratch themselves kangaroo fashion, and generally play their part realistically. Hunters armed with spears enter the ring, and things become lively. The natives are excellent mimics, and an aboriginal "kangaroo" is more convincing than any pantomime animal.

Kangaroo will not be found in vocabularies of aboriginal dialects; the nearest approaches to this word familiar the world over, being *kanguru*, *koongaroo*, *kungara*, and *congaru*. A long list of words denoting the kangaroo could be compiled, few of them bearing any resemblance to that adopted by Europ-

eans ever since the publication of Captain Cook's journal of his historic voyage along the east coast of Australia. *Kangaroo* was a word apparently unknown to the natives of the Endeavour River district where Cook and his companions saw their first kangaroo: the evidence indicates that, actually, it was a whip-tail wallaby. The blacks' name for it was *menua*, according to an explorer who visited the Endeavour River about fifty years after Cook. There has been a great deal of argument over this word, *kangaroo*. Some experts declare it means "I don't understand," and was the answer given by the aborigines when Captain Cook or one of his companions asked them the name of the strange new animal, which was "something less than a greyhound, of a mouse colour, very slender made, and swift of foot."

Doubtless *kangaroo* was a genuine blackfellow name for the wallaby discovered on that historic June day, in 1770. Cook himself gives variants in his Journal: *kangooroo* and *kangaru*. Probably, however we spell it, the aboriginal word means "long nose"; for a learned philologist (the late Rev. John Mathew) stated that *ka* or *kang*, meaning *nose* or *head*, and *goora*, denoting *long*, were both widely current words in native dialects.

In any event, Captain Cook and his men were not the first Europeans to see a kangaroo, or wallaby — wallabies really are small kinds of kangaroos. The honor belongs, almost certainly, to Pelsart, the Dutch navigator, whose ship was wrecked on the Abrolhos Islands, off Geraldton, Western Australia, in 1629, or one hundred and forty years before Cook's vessel, the *Endeavour*, was careened near the mouth of the North Queensland river which bears her name. Pelsart, in the Journal of his voyage, describes the Dama wallaby, still found on the Abrolhos; and, says Ellis Troughton, this possibly was the first authentic account of any Australian marsupial. Sir Joseph Banks gives an account of the *kangooroo* in his Journal (edtn. Sir Joseph Hooker, 1896) under date August 26, 1770: "Quadrupeds we saw but few, and were able to catch but few of those we did. The largest was called by the natives *kangooroo*; it is different from any European, and, indeed, any animal I have heard or read of, except the jerboa of Egypt, which is not larger than a rat, while this is as large as a middling lamb."

Charles Lamb, in his essay on "Distant Correspondents," let his fancy play upon the strange hopping animal of the Antipodes: "The kangaroos — your aborigines — do they

keep their primitive simplicity un-Europe-tainted, with those little short fore puds, looking like a lesson formed by Nature to the pickpocket! Marry, for diving into fobs they are rather lamely provided *a priori*; but if the hue and cry were once up, they would show as fair a pair of hind-shifters as the expertest locomotor in the colony" (*Essays of Elia*).

Early portraits of the kangaroo are quaint. Perhaps the most engaging of all is that given (a colour plate) in Barrington's "History of New South Wales," published at London in 1802. It is idyllic: a mother kangaroo plucks leafy twigs from a woolly-branched tree and offers them to the *twins* in the pouch. These "joeys" look rather like pygmy short-haired dogs of a nondescript breed.

Kangaroos were exhibited alive in England before the end of the eighteenth century, for we find Thomas Pennant, a celebrated naturalist, writing of one seen by him in London in 1793: "It would sport with its keeper in a very singular manner: it first placed its tail in a perpendicular manner; erected its body on it as a prop; and then, raising its whole body, darted its hind legs on the breast of the man. It was capable of striking with great force, if provoked; and it could scratch violently with its fore claws." This is the earliest account of the kangaroo as a boxing animal. "Boxing" comes naturally to the big marsupials. The males frequently have stand-up fights, which may last for half an hour. They deliver shrewd blows with power behind them. In the pairing season, these fights are fierce enough; at other times, kangaroos usually are peaceful, though an occasional boxing match is in order. Several boxing kangaroos have been exhibited oversea, as well as in their homeland.

It is not difficult to train these animals, since, in their natural mode of "boxing," they nearly reproduce many movements of the human boxer. Once, at Melbourne Zoological Gardens, a professional boxer challenged a grey kangaroo to a sparring match—and the latter won on points. An angry male kangaroo drove a trespasser from its enclosure: he was lucky to escape uninjured. The author of this book was attacked by a red kangaroo in a Zoo paddock when taking a close-up snapshot of it. The big, powerful animal rushed him, secured a hold with its forepaws, and then tried to bring one of its hind feet into action — to use the large conical claw on the central toe, which can rip open a dog almost as easily as a knife rips paper. Only the intervention of a keeper armed

with a waddy saved the naturalist, who could not fight off his assailant barehanded.

An "old man" kangaroo at bay is a match for an unarmed man, and for several kangaroo dogs without the support of their master, who, as a rule, has no idea of fair play, but rushes in to brain the marsupial with his stock-whip handle, or a stirrup-iron, when the dogs are being worsted. But often the dogs bail up and begin to attack the "old man" before the hunter arrives to make the odds too heavy for the most powerful 'roo in Australia. Before the end comes, the chances are that one or two of the dogs will have been ripped up and killed, or badly injured.

Sometimes a hunted animal takes to water and stands at bay in the shallows. When a dog comes within range it may be seized and held under water until drowned. It is stated, also, that kangaroos deliberately carry dogs to water for the purpose of drowning them. With its back to a tree, a kangaroo, should the chance offer, seizes one of the attacking dogs with its forepaws, and either dashes it to the ground, or hugs it and rips up its body with that terrible hind-foot claw.

There is no true sport in kangaroo hunting on horseback, or with packs of dogs; nor in shooting from motor cars. No sport either in kangaroo "drives," which are sometimes carried out on stations. There may be a spice of danger in galloping after kangaroos in rough country where logs and burrows are plentiful; but those who hunt our national animals "just for sport," might turn their attention to clay birds — or really take a risk by hunting buffaloes in North Australia.

None of the aboriginal methods of hunting the kangaroo is "sporting," because the natives hunt only to get tucker. Many of the tribes favor stalking, their weapons being long-handled spears, thrown with the aid of a womera. Often the bush is fired, and when terrified animals come leaping ahead of the flames they are met by naked spearsmen, who rarely miss their aim.

Wedgetailed eagles or eaglehawks are among the kangaroo's few natural enemies. Young animals are the chief victims, though a full-grown kangaroo weakened by lack of food or some ailment, is easy prey for our great eagles. Often the birds hunt in pairs, and craftily, as if they understand one another and each had its part to play in the tragedy which means a square meal for both if successfully played. Dingoes, hunting in packs, or in pairs, overtake and pull down fair-

sized kangaroos; foxes also take toll of the younger ones, and the weaklings. Pythons which live among the rocks prey upon rock-wallabies and the smaller species of kangaroo that frequent rocky places.

Practically all classes of country, excepting true desert, support kangaroo life, if we include the wallabies. Through the ages, different species have become adapted to their present environment. Thus the kangaroo has become the typical Australian animal; representing our island continent as the bald-headed eagle represents the United States of America. It is fitting that kangaroo and emu should be the supporters of the Commonwealth Coat of Arms: the former is the largest of living marsupials; while the emu is our biggest bird and is exceeded in size by only one other in the world — the ostrich.

THE KANGAROO FAMILY

Disregarding some modern schemes of classification and many of the names that go with them, we may introduce the Kangaroo Family in a friendly manner without being unscientific. Scientific nomenclature is of minor importance to the nature lover; and, besides, there's a deal of difference in rival schemes. What one authority advances as indisputably right, another rejects; while a third may differ from him. Familiar names for our marsupials are retained in this popular book, because the author believes that changes are only confusing, however correct, according to the Law of Priority, and need not be adopted by the layman.

The genus *Macropus* includes the typical kangaroos and wallabies, which are divided, roughly, into three groups: the larger kangaroos, the large wallabies, and the smaller wallabies. All these form a sub-family, *Macropodinae*, of the Family *Macropodidae* (kangaroos and their allies or kin). The rat-kangaroos, or kangaroo-rats as they are popularly termed, form another sub-family, while one species, a quaint and most primitive little animal (*Hypsiprymnodon*) forms still a third division of the Kangaroo Family: it owes this distinction to the fact that it alone, of all the numerous members of the Family, possesses the first or great toe on the hind foot — a claw-toe; while its tail is almost hairless and resembles that of the scaly-tailed possum (*Wyulda*). Ellis Troughton, a foremost authority on the marsupials, says that the musk-rat kangaroo shows "such definite traces of relationship with the possums that much doubt has been expressed as to which of the families it really belongs."

There are at least seven kangaroos — the Big Seven of the Family; but it should always be remembered that wallabies really are only the smaller kinds of kangaroos, and not markedly distinguished from their big cousins, though they display certain minor differences external and structural. If we admit all the species that have been described and named, and all the sub-species, then there are more than a score of kangaroos, and some forty wallabies, all originally included in the same genus, *Macropus*, which means of course "great foot."

The largest of all the living species is the giant red kangaroo (*Macropus rufus*), whose range includes Victoria, New South Wales, South Australia, North Australia, and the Western State. Though found in the far North, it avoids the tropical coastal parts, being essentially an animal of the drier inland country and open plains. Unless exceptionally, this beautiful species does not occur within one hundred miles, or more, of the sea. One meets with small mobs of red kangaroos in Central Australia, north of the Macdonnell Ranges and out towards Central Mount Stuart; and still further north in the Territory.

There are few Australian nature pictures more charming than that formed by a group of red kangaroos lying at their ease in the shade of an old gum tree. The does are not only shapely, but also aesthetically coloured, the back and sides of the body being smoky blue-grey, while the under surface and the legs are white. "Flying doe" and "blue flyer" are nick-names for the female red kangaroo, whose mate is a handsome fellow clad in wine-red coloured fur, tinged pale crimson on throat and chest. Of course he is much more powerfully built than the slender and graceful doe.

Though the red species generally is regarded as the largest, recorded measurements indicate that the great grey or forester kangaroo (*Macropus giganteus*) sometimes rivals it in size. Troughton gives some interesting figures in "Furred Animals of Australia." A correspondent of the Australian Museum stated that he had shot several red kangaroos measuring 8 feet 10 inches, from nose to tail-tip, and greys a foot shorter. But the *Royal Natural History* mentions a specimen of *M. giganteus* which measured 9 feet 7 inches. The largest specimen of the red species in the Australian Museum is 8 feet 2 inches, along the curves of the body; while the largest grey measures 8 feet 6 inches. The biggest red ever domiciled at the Melbourne Zoological Gardens was 7 feet in height when standing on "tip-toe" — a characteristic kangaroo attitude, especially when fighting or at bay.

Giant extinct kangaroos greatly exceeded in size the "boomers" of to-day. One of these monsters of the Past is appropriately named *Macropus titan*. It flourished during the Pleistocene period, when, also, there were giant wallabies in Kangaroo Land: some species had skulls measuring 12 inches in length. In western Victoria, a stone implement was found associated with fossil remains of *M. titan* and other species.



HOW KANGAROOS HOP: NOTE THAT THE TAIL IS HELD CLEAR OF THE GROUND

YOUNG KANGAROOS ARE EASILY TAMED





ROCK CARVING, MOOTWINGEE, N.S.W.

ROCK CARVING NEAR SYDNEY



So that those giant marsupials had Stone Age men to hunt them.

The great grey kangaroo often is called "forester" because of its preference for open forest lands. Though mainly a coastal form, it also occurs inland. Vast tracts of its territory were long ago given over to sheep and cattle, and agriculture, but the forester still exists in fair numbers in some parts of its range, the eastern and south-eastern portions of Australia. It associates in small and large mobs: one may see fifty or more together; often, a lone male forester.

There are many references to "flying does" and foresters in the old books about old Colonial days, when kangaroos abounded in districts where now few or none will be seen. The speed of a "blue flyer," or "boomer," chased on horseback astonished new chums especially and many tall yarns told by old hands, regarding mighty leaps and the habits of kangaroos in general. But we may rely upon what the "Old Bushman" recorded in his fascinating little book, which has become so rare that collectors of Australiana greatly value a mint copy of the first edition. "The general height of a full grown kangaroo," our Bush naturalist-hunter says, "is perhaps about 5 feet. The largest, I think, that I ever killed, measured 9 feet 6 inches from the top of the nose to the end of the tail when stretched out on the ground. The tail is very thick at the root, gradually tapering to the end, and in an old kangaroo will be three or four feet long, and weigh 10 to 15 lbs. I have, however, seen them over 20 lbs."

As regards the kangaroo's speed and leaping powers the "Old Bushman" has this to say: "When running, it springs from the ground in an erect position, propelled by its powerful hind-legs and balanced by its tail, holding its short forearms well into the chest, after the manner of a professional runner. Thus is bounds lightly and easily along, clearing any obstacles, such as trees, and even low fences, in its stride. I never fairly measured one of these strides or springs, but I am certain, when hard pressed, an 'old man' or 'flying doe' will clear nearly ten yards at a spring. The long tail materially assists them in running, and its measured thump may be heard on the ground long before the kangaroo itself appears in sight in the thick forest."

That "measured thump" has misled most people who have heard it but have seldom seen a wild kangaroo, to accept the popular notion concerning the use of the animal's tail.

The kangaroo does not "spring off its tail," though the tail often thuds the ground when its owner is moving along at a leisurely pace. When a kangaroo is leaping at high speed, with the body inclined forward, its tail acts as a balancer and is held clear of the ground. The length of the hop increases with speed, though short hops are the rule when logs or other obstacles are numerous. A full-grown male kangaroo might clear more than 25 feet at a hop when travelling at top speed: much greater leaps have been reported — but were they measured accurately? Perhaps thirty feet is near the limit, and such mighty hops are made exceptionally. As for speed, a kangaroo leaping away for life might do nearly 40 miles an hour over a short distance, but he could not keep it up for any length of time. Twenty miles an hour would not worry him, though at about 30 miles he would be exerting his powers towards the limit for a sustained effort. Here again, reports give higher figures than those generally favored by naturalists, who prefer facts to guesses. The author has paced kangaroos over a few hundred yards of bush road in a motor car, and left them behind before the speedometer registered thirty-five.

A hunted grey kangaroo cleared a fence of 9 feet in height without touching the top rail. Yet many kangaroos break their legs in attempting to jump paddock fences on the stations. Six feet is a fairly good jump for full-grown kangaroos, and often a fence of that height brings them to grief. Wire fences claim many victims — emus as well as kangaroos; and the poor crippled creatures slowly starve to death unless a boundary rider appears to put them out of their misery.

Camp-fire arguments, when kangaroos are the topic, usually swing from leaps and speed to the birth question. Most bushmen cling firmly to the popular error, held by a surprising number of townspeople, too. "The young are born in the pouch," these good folk declare; some even assert that the embryo grows from its mother's nipple! To convince them of error seems to be impossible. Why, have not tiny, naked kangaroo "babies" been found, in hundreds of cases, so firmly attached to the nipples in the pouch that they could only have grown there? Naturalists and professors don't know what they are talking about! Ask any old bushman, or kangaroo hunter.

The infant kangaroo, or wallaby, of course is born in the normal manner among mammals; and an unlovely object it is: barely one inch long, and naked. Helpless as it looks, the tiny creature is able to climb up to the pouch through its

mother's fur, the journey occupying perhaps half an hour. The mother may aid with her lips the little traveller from the ground to the nursery; but often she appears unconscious of its existence. Safely in the pouch at last, the infant "joey" fastens on to the nipple, which is pointed and firm enough for the tiny mouth to seize, but soon becomes larger and softens, forming a kind of bulb. So close is the alliance between nipple and mouth, the infant marsupial seems to have developed from the teat, and can be removed only by force, usually causing rupture.

The "joey" remains anything but pretty until a fur covering is developed, two or three months after birth. Then it is a charming little animal, which likes to survey the great big world from the safety of the maternal pouch. For some time after it has begun to venture abroad the "joey" keeps near its mother, ready to hop to her when frightened and dive, often head foremost, into the pouch. But very soon a small head appears and, after a quick look around, the young kangaroo leaves home and commences to nibble at the grass again.

Of slighter build than the grey species, smaller and darker in coloration, the black-faced kangaroo (*Macropus melanops*) generally favours bush and scrublands; it is a familiar animal of the Mallee country.

The wallaroo or euro (*Macropus robustus*) has been called a "mountaineer marsupial" because it lives chiefly among rocky hills and is an agile rock climber. Both coastal and inland areas are within its range: Queensland, New South Wales, South Australia, North-west Australia, and the Northern Territory. It varies considerably in coloration, and several species and sub-species are recognised by some naturalists. There are light-coloured and very dark, almost black, forms, and a rufous coloured euro. Among the euro's favourite haunts are gorges of the Macdonnell Ranges, where often one is seen on a high ledge, or hopping along near the verge of almost perpendicular rock walls.

Wallaroos are thickset, powerful animals, capable of putting up a good fight against kangaroo dogs. In fighting, they use their teeth more than other kangaroos do, but also bring into action the hind-foot armed with a deadly claw. An old male euro on the defensive should be approached with caution by an unarmed man for he may prove to be more than his enemy's match.

Bernard's wallaroo (*Macropus bernardus*) inhabits the South Alligator River country, in the Northern Territory. The antilopine kangaroo (*Macropus antilopinus*), a short-furred, stoutly built and heavy species, is another native of Arnhem Land. It is less numerous than any of its allies. The Isabel-line kangaroo (*Macropus isabellinus*), of North-western Australia, probably is only a geographical variety of the wallaroo; while Tasmania's grey kangaroo differs only slightly from the mainland form and can hardly be regarded as a distinct species.

The Kangaroo Island kangaroo (*Macropus fuliginosus*) is a heavily built coarse-furred animal, coloured sooty-brown above in the summertime, while during winter it is black, with white underparts. It still exists in numbers on the island to which it is indigenous, being perhaps most plentiful in the Flinders Chase Reserve, an area of some two hundred square miles of bushland which provides sanctuary for many kinds of native birds and animals. When Captain Matthew Flinders landed on Kangaroo Island, in March, 1807, kangaroos were so abundant that the navigator named the island after them. Emus also were plentiful, an insular species, or variety, which has long been extinct. Many Kangaroo Island kangaroos are living in a semi-wild state at Humbug Scrub wild life sanctuary, South Australia.

Besides the seven, or eight, generally recognised species, other kangaroos are described in works on Australian animals; but these are doubtfully distinct from the field naturalist's point of view. The tendency is to promote geographical varieties to the dignity of specific rank.

Nobody has written a full length biography of any species of kangaroo: sufficient material for it is lacking. Popular "humanised" biographies may be pleasant to read, but they possess no scientific value and should be written only for children. Of the kangaroo's intimate home life little is known beyond what has been learned by observation of animals in captivity. But we do know something of the everyday habits of wild kangaroos.

During the daytime kangaroos usually prefer rest to activity. They like to lie in the shade, outstretched in a free and easy manner; and comfort is increased by shallow depressions in the ground, which serve as beds and dust-baths. Usually, feeding time begins towards evening, and may end soon after sunrise, though often kangaroos are seen browsing later in the day. When a mob leaves "home" for the feeding-

ground, the old males as a rule are in the van, but when a mob is pursued they bring up the rear.

The best account of grey kangaroos at home is that given by the "Old Bushman," already quoted: "The Kangaroo lies up by day during the hot summer weather, in damp thickly-scrubbed gullies, in the winter on dry sandy rises. Here, unless disturbed, they will remain quiet for hours; and it is a pretty sight to watch a mob camped up, some of them playing with each other, some quietly nibbling the young shrubs and grass, or basking in the sun half asleep on their sides. About Christmastime the young ones appear to leave their mothers' sides, and congregate in mobs by themselves. I have seen as many as fifty running together, and very pretty they looked."

The camping-grounds often are on a lightly timbered rise. Well defined pads lead from one ground to another. These camping-grounds, especially on the plains, may be miles from any permanent water. Kangaroos are able to live for a long time without water, but they have drinking-places which often are visited every day.

Kangaroos swim well and take readily to water when hunted. They will even enter the sea. John Gould, The Bird Man, who wrote, and published, a splendid work on the "Mammals of Australia," mentions a kangaroo which swam through the sea for two miles, against big waves for half the distance. Kangaroos in the Sperm Whale Head National Park, Gippsland Lakes District, Victoria, swim across an arm of the sea to reach coastal dunes covered in tea-tree. They have a regular crossing place, reached by way of a pad through the scrub.

WALLABIES

As already mentioned, wallabies are merely smaller kangaroos, not markedly distinguished from their big relations excepting by size. The species are too numerous for all to be described, but our selection includes the more interesting forms, also those that are most abundant.

Generally, wallabies are not gregarious, though some kinds occur in droves or mobs. It is usual, however, to see many of the species in pairs, or singly. Owing to danger from their enemies, including man, the most of the wallabies avoid being out in the open except when feeding, and then they keep near cover. During the daytime they remain among scrub, or undergrowth, coming out to feed late in the afternoon, or at twilight. They make a charming picture when feeding in a forest glade; now and then sitting erect to gaze around. They are shy animals, and easily alarmed. Wallaby tracks through scrub and jungle may be followed sometimes for long distances. "On the Wallaby" is a familiar Australian saying; but sun-downers and other bush wanderers prefer roads to wallaby tracks, when they have a choice.

Different classes of country are frequented by wallabies: dry Mallee scrub, scrubby hills, lightly timbered country, forest lands, sub-tropical palm bushes, and tropical rain-forest or jungle. Nowhere are they more abundant than in North Australia's open forest country, though only one or two species are strongly represented there.

In wide-ranging species, colour variation is so considerable that several colour forms of one may be regarded by some naturalists as sub-species, or even full species. The black-tailed wallaby (*Macropus ualabatus*), which ranges from Victoria to northern parts of Queensland, is of a darker colour in the south than in the north. It abounds in many southern districts, and heavy toll is taken of "blacktail" by fur-trappers, while sportsmen regard it as fair game.

All the large wallabies are much alike. Their hind-feet are relatively large, and they are more powerful jumpers than their smaller cousins.

The red-necked or brush wallaby (*Macropus ruficollis*), like the blacktail, belongs to the "Large" group and is one of those termed "pademelons," a word probably of aboriginal

origin, though sometimes spelled "paddymelon." Troughton includes nine species in a group of "Scrub or Pademelon Wallabies." The brush wallaby is a coastal form and ranges from Victoria to southern Queensland — the border districts. Tasmania is the headquarters of a closely related species, Bennett's wallaby or pademelon (*Macropus Bennettii*), distinguished by its longer and thicker fur. Bennett's wallaby, which has been greatly persecuted in Tasmania for the sake of its valuable pelt, is found also on Bass Strait islands and in southern Victoria. Its ally, the typical "red-neck," does not occur off the mainland.

Parry's wallaby, of New South Wales and Queensland, is the most beautiful of the larger species, with its slender body and exceptionally long tail, and white and grey markings which have earned for it the nickname "pretty face." This swift and graceful animal frequents fairly open country, on the highlands. Very graceful, also, is the agile wallaby (*Macropus agilis*), of the tropical north, Papua, and some of the Torres Strait islands. Its fur is of a delicate light fawn colour. The ears are short. Agile wallabies are at home among tall grass in open country.

The black-striped wallaby, which inhabits inland portions of New South Wales and Queensland, has conspicuous markings on the thighs. Another handsome species is the black-gloved wallaby (*Macropus irma*), of South-western Australia. Coloured dark bluish-grey above, it is yellowish-grey on the under surface; fingers and toes are black "gloved," while the stiff hairs cresting the tail also are black. Frequenting chiefly open forest country, the black-gloved wallaby is abundant in many parts of its range.

The smaller wallabies, commonly termed pademelons, are characterised by soft, beautiful fur. There are about a dozen species, and, as a group, they range far into the tropics, one kind occurring on the Aru Islands; another, in New Guinea and New Britain. Australian forms are among the trappers' victims. Pademelons mostly are shy little animals, inhabiting dense scrub, or undergrowth. They come out to feed on the edges of the forest, or jungle, towards evening.

Though so many are given the popular name, the true pademelon of the early colonists doubtless is *Macropus thetidis*, of South-eastern Australia, so plentiful in scrub-covered country. The rufous-bellied wallaby or pademelon (*Macropus billardieri*), though now extremely rare in Victoria, if not extinct, is found still in numbers in Tasmania. The Cape

York wallaby (*Macropus coxeni*) has short, sandy-coloured or grizzled fur, white on the under surface of the body. This light coloration may be an adaptation to environment.

The short-tailed wallaby (*Macropus brachyurus*), whose long grey-brown fur is coarse and dense, inhabits South-western Australia, while the banded species (*Macropus stigmaticus*), coloured rufous-grey, rufous and white (on the under-surface), is confined to north-eastern Queensland.

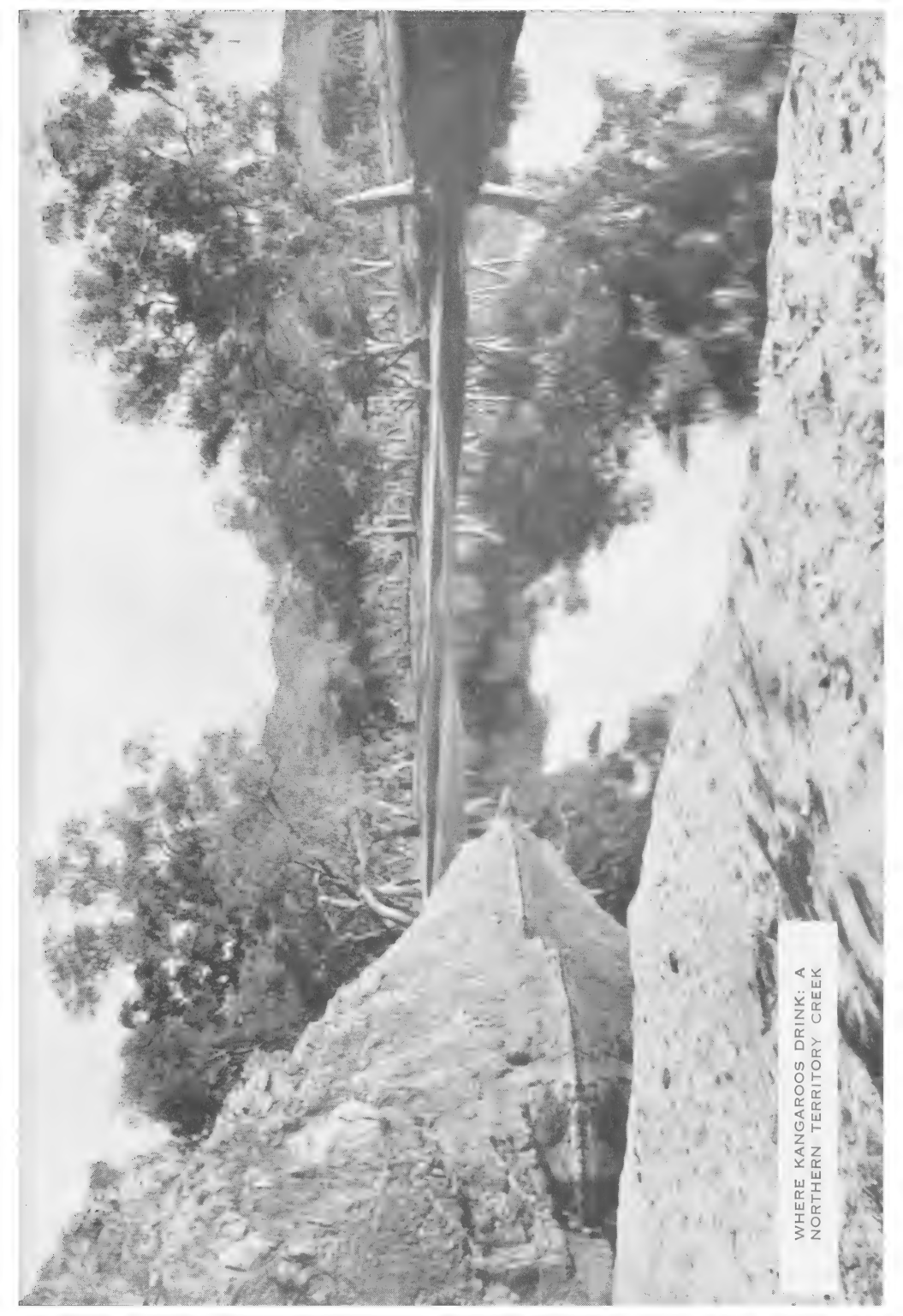
The Dama wallaby (*Macropus eugenii*), of South-eastern and South-western Australia, and islands lying off the coast, deserves special mention, as being probably the first Australian marsupial to become known to Europeans, and Science. Facts concerning its discovery by the Dutch navigator Pelsart are given in an earlier page. In South Australia the Dama wallaby, formerly an abundant species in the south-east, occurs now only on Eyre's Peninsula and Kangaroo Island.

The rock-wallabies—there are about a dozen species—inhabit rocky ranges, throughout Australia, but are not represented in Tasmania. Adapted for climbing among rocks, they travel swiftly over the paths which they form in their wild, romantic haunts.

The yellow-footed rock-wallaby (*Petrogale xanthopus*), which ranges from South Australia to Western Queensland, is black-grey above and white on the under-surface. It has white cheek-stripes, an orange-coloured spot above each eye, and feet of a rich yellow hue; the long tail is ringed above with brown and yellow, alternately. The brush-tailed species (*Petrogale penicillata*) inhabits the ranges of eastern Australia, as far north as Rockhampton, Queensland.

The curious nail-tailed wallabies—there are several species—are provided with a small horny spur at the end of the tail: the real use of this "nail" is unknown. The bridled nail-tailed wallaby (*Onychogale frenata*), of eastern Australia, inhabits ranges of small hills, and long grass country, but is seldom met with: in Victoria it has become very rare. It is distinguished from the two other forms by a black stripe behind the shoulder, and a long and bushy tail.

Noted for their high speed and great powers of leaping, the little hare-wallabies recall the common European hare (acclimatised in Southern Australia), both in size and general appearance. The common hare-wallaby (*Lagorchestes leporides*) inhabits inland districts of New South Wales and South Australia.

A black and white photograph showing a river or creek flowing through a rocky, hilly landscape. The river is in the center, reflecting the sky and the surrounding trees. The banks are covered with dense, leafy trees and shrubs. In the foreground, there are large, light-colored rocks or boulders. The overall scene is a natural, scenic view of a waterway in a wooded area.

WHERE KANGAROOS DRINK: A
NORTHERN TERRITORY CREEK



KANGAROOS IN HUMBUG SCRUB, S A

KANGAROO ISLAND KANGAROO



RAT-KANGAROOS.

Belonging to the same family as the kangaroos and wallabies, the rat-kangaroos or "kangaroo-rats" are placed in two sub-families. One species alone, the musk-rat kangaroo (*Hypsiprymnodon moschatus*) has the distinction of forming the *Hypsiprymnodontinæ* sub-family; while all the other rat-kangaroos, about ten species, belong to the sub-family *Potoroinæ*.

Some account of the remarkable little possum-like *Hypsiprymnodon* has already been given. It is one of the most interesting of all Australian marsupials, forming, as it does, a link between the possums and the kangaroos — an intermediate family. The musk rat-kangaroo was discovered in the Herbert River district, in 1874. Its specific name, *moschatus*, refers to the musky scent emitted by the animal. A denizen of dense tropical palm scrubs of north-western Queensland, the musk-rat kangaroo seldom comes under observation though it is perhaps not rare, and, according to its discoverer, Dr. E. P. Ramsay, goes food hunting chiefly in the daytime. Its fur is of a rich brown color, like that of some possums found in the rain-forests, and it measures about 18 inches in length, including the tail, which is half as long as the body.

All the typical rat-kangaroos lack the great toe, possessed by *Hypsiprymnodon*, but are related to the possum-like form by teeth of a type more primitive than those of the kangaroos and wallabies. In the early days of colonisation, these small hopping animals abounded over the greater part of Australia; now nearly all the species are so rare that some are threatened with extinction. The introduced fox, arch-enemy of native birds and animals that live on, or close to the ground, mainly is responsible for the rarity of rat-kangaroos: the fox, acclimatised in this country for the pleasure of a few sportsmen, has caused immeasurable damage to native fauna, besides taking toll of poultry and killing lambs.

The fox continues to spread, while many Australian birds and animals become scarcer owing to the alien raider, which even kills lyre-birds and robs their nests. As Ellis Troughton remarks, in his account of the rat-kangaroos, there seems to be

little doubt that those little animals will disappear from wherever the fox can penetrate. Thus in Victoria, where foxes are very numerous, one species, the brush-tailed rat-kangaroo (*Bettongia penicillata*) already has become a thing of the past; while another, the rufous rat-kangaroo (*Aepyprymnus rufescens*) is very rare: formerly it was a common animal in the north-eastern portion of the State. The dark rat-kangaroo (*Potorous tridactylus*), though scarce enough, still survives in the north-east, in the Grampians, and probably in the Otway Ranges — according to C. W. Brazenor, of the National Museum, Melbourne, a leading authority on Australian mammals.

The brush-tailed rat-kangaroo, probably extinct, certainly extremely rare, in South and Eastern Australia, survives in fair numbers in South-western Australia. Formerly the "squeaker," as it was popularly termed, was so abundant in South Australia that, Professor Wood-Jones states, "dealers in Adelaide did a great trade in selling them by the dozen at about ninepence a head for coursing on Sunday afternoons. It may surprise people who remember those days to know that there is not a preserved specimen, not even a skin of the animal available for scientific study in South Australia today. In the same way it will one day surprise the rising generation when they realise that the few native animals they are now familiar with have gone forever." (*Mammals of South Australia, Part II.*)

Lesueur's or Gray's rat-kangaroo (*Bettongia lesueuri*), of South and Western Australia, was discovered on Dirk Hartog's Island, in 1817, by de Freycinet's naturalists. It still exists in some numbers even in South Australia — certain districts of the north-west. Here, says Wood-Jones, the *tungoos* share with the rabbits the latter's large warrens, preferring those among sand ridges of the typical sandhill and claypan country.

The *tungoo* or *Bettongia* has thrown in its lot with an introduced rodent—the rabbit, and seems to live in harmony with it. And yet the little marsupials are extremely pugnacious; bold too, for when herbage is scarce in their haunts, they will even enter homesteads in quest of something edible. "They will come into a room and boldly face a cat in order to obtain some potato peelings; they will scramble over a paling fence four or five feet high in order to get at the vegetable garden." (*Mammals of South Australia, Part II.*) Poison pollard, laid for rabbits, helped to exterminate *tungoos* in southern parts of the State.

A remarkable feature connected with the tufted or brush-tailed rat-kangaroo's nesting habits is described by John Gould, who figures a "squeaker" with its tail-tip curled around a whip of grass for use in nest-building. Gould states that he had observed captive *Bettongias* performing this strange prehensile action; but his observations have not since been confirmed by other naturalists, though there is no reason to doubt their accuracy.

The plain-living or desert rat-kangaroo (*Caloprymnus campestris*) has a remarkable history. Described by Gould in 1843, it became a "lost" species for more than sixty years; then, after a wonderful season of good rains in the interior, when many native animals greatly increased in numbers, the desert rat-kangaroo re-appeared, and specimens were secured by H. A. Finlayson, Hon. Curator of Mammals at the South Australian Museum, who also took photographs of, and made valuable observations on the re-discovered marsupial.

There are several kinds of *Potorous*, long-nosed and broad-faced rat-kangaroos, which are about the size of a small rabbit and more rat-like than the "squeakers" and *tungoos*. The common or dark rat-kangaroo (*Potorous tridactylus*) was called *potoroo* by the natives of Port Jackson; this name being used for the little animals by Surveyor-General John White in his *Journal of a Voyage to New South Wales* (1790), in which the *potoroo* is figured. But it had already been described and illustrated as the "kangaroo rat," in *The Voyage of Governor Phillip to Botany Bay* (1789). Exceedingly rare, if not extinct, on the mainland, the *potoroo* still exists in some numbers in Tasmania where it is known as the "wallaby-rat." This animal is a geographical race of the mainland species.

TREE-KANGAROOS

Only those who have seen them in their haunts know what remarkable animals tree-kangaroos are; for in captivity these marsupials have no opportunity to display their accomplishments — climbing, and jumping from lofty branches to the ground. The Zoo enclosure may include a small dead tree, or even a living one; but even this is lacking where the animals are caged: then they must be content with a few sloping dead limbs, or portion of an old tree-trunk leaning against the back wall.

Tree-kangaroos inhabit dense tropical rain forest or jungle, where trees of many kinds grow tall and there are hundreds to choose from. Not that big trees are always preferred: often low ones are climbed, and downward leaps made from branches only 15 feet or 20 feet up. But several of their favourite food-trees attain a height of well over 100 feet; and when hard pressed escaping from danger, perhaps in the form of a hungry blackfellow, a tree-kangaroo does not hesitate to jump from a limb even 60 feet from the ground. Normally, the animal descends, tail foremost, to a low bough before jumping. The author has seen a wild *boongarry* (an aboriginal word) make a jump of nearly 50 feet to the ground from a horizontal bough; also he has observed tree-kangaroos climbing nimbly, and descending trees schoolboy fashion — sliding down, with their claws acting both as grippers and brakes. This is their usual mode of descent when undisturbed, but almost invariably they jump when hunted from their treetop retreat. An aborigine after a *boongarry* may climb its home-tree, or ascend a neighbouring one and try to dislodge the animal by throwing a waddy or some other missile at it.

The moment a tree-kangaroo alights, as safely as a cat which has jumped from a fence, it hops swiftly away — unless waiting blackfellows, or their dogs, are too quick for it. Tree-kangaroos are as much at home on the ground as they are among lofty branches; and indeed they spend much of their time there, climbing trees for safety and for the purpose of feeding upon young foliage, probably also fruit of the trees.

Some writers describe them as clumsy-looking on the ground, while others say that tree-kangaroos hop along as

easily as a small wallaby does. But their general structure adapts them to an arboreal way of life especially. In all the species, the footpads are much roughened; the claws are strong and thick and sharpened, while those of the two outer toes are as much curved on the hind-foot as on the fore-foot. The very long tail acts as a balance when its owner is perched up aloft. A tree-kangaroo's forelimbs are almost as long as the hinder ones, and are exceptionally robust and strong, probably as a result of arboreal habits during thousands of years. Or, as Lydekker suggests, it may be a primitive feature. Certainly the tree-climbers have acquired larger and more powerful forelimbs than any other kangaroos. They are beautiful animals, but do not look their best in captivity: one must see these forest loving creatures in their native haunts, to realise their charm.

All but two of the ten or a dozen species of tree-kangaroos inhabit the great tropical island, New Guinea, several being native to Papua. The exceptions are confined to North-eastern Queensland. One species, Lumholtz's tree-kangaroo (*Dendrolagus lumholtzi*), lives in rain-forests of the Atherton Tableland, the Herbert River country, and the Bellenden Ker Range, where, too, the golden bower-bird is at home. The other Australian form, Bennett's tree-kangaroo (*Dendrolagus bennettianus*), is found in the Daintree River and Bloomfield River districts, also in the vicinity of Cooktown, to the north of the Bloomfield. South of Daintree, this dusky-cloured species does not occur — at least has not been recorded.

Clearing the land for settlement and agriculture has deprived the Lumholtz tree-kangaroo of much of its territory; but its ally so far has been more fortunate. Both species must become scarcer as settlement advances in the north; and naturalists hope that extensive tracts of rain-forest where they still exist in fair numbers, will be permanently reserved as national parks and wild life sanctuaries.

The Lumholtz tree-kangaroo must be regarded as one of the most beautiful Australian animals. Here is a colour portrait: general colour, fine grizzled grey, chest white, under-surface pale yellowish-white, face and chin black, also the toes. Dr. Carl Lumholtz, a Norwegian naturalist and explorer, discovered the *boongarry*, as the natives called it, in the Herbert River district, in 1882.

Much of the wild country traversed by Lumholtz in his search for the *boongarry* had been cleared of rain-forest, and cultivated. Farther north, on the Daintree,

settlement had made but little progress, when the author visited the district, and settlers, when asked about tree-kangaroos, pointed to blue peaks in the distance—the range where the *boongarry* lived, as yet untroubled by man the destroyer. One specimen only was seen, and the bushman who captured it, near a high mountain-top, would not part with his *boongarry*.

Bennett's tree-kangaroo was described from specimens obtained in the Bloomfield River district in the 'eighties. The natives, who called it *tcharibeena*, and hunted the animal with dogs, regarded its flesh as very good tucker. Unlike the *boongarry*, which climbs trees to go foraging, Bennett's tree-kangaroo was said by some observers to remain among the branches during the daytime and descend at dusk for the purpose of feeding upon scrub-vines and other plants. However, its habits most probably are similar to those of its ally.

The late W. H. D. Le Souef, Director of Melbourne Zoological Gardens, obtained sixteen Bennett's tree-kangaroos during a visit to the Bloomfield River district. The animals were brought south by sea, and domiciled in the Gardens, where they had a dead gum tree to climb and wooden huts on stilts — like miniature Papuan tree-houses, for shelter and sleeping quarters. They lived for some time, apparently happy enough but, one by one, they died. Rarely do these forest loving marsupials survive for more than about a year in captivity.

Le Souef, who calls it the "tree-wallaby," gives an excellent account of Bennett's tree-kangaroo as it lives in the wilds. It passes the day coiled up near the top of a tree, he says, sleeping most of the time until about sunset, when it besirs itself and commences to feed, up aloft. It eats the leaves of the white cedar and other trees, also those of creepers, fronds of the bird's-nest fern (an epiphyte), and fruit. In captivity, vegetables, fruit, and gum-leaves are eaten. In a wild state, according to Le Souef, tree-kangaroos seem to live almost exclusively on the trees, often passing from one tree to another by means of the branches. When unable to do this, they descend to the ground. The natives hunt them with dogs, which track them by scent to their home-trees. Some of the hunters climb any neighbouring tree, to prevent the quarry from escaping to it, while one of the party, ascending the tree in which the animal has been "treed," forces it to jump to the ground, or catches it by the long, hanging tail and pulls it down. Other natives are waiting below, ready to secure the victim. (*Wild Life in Australia*.)

THE POSSUMS

"Opossums," the best known of all Australian arboreal animals have been called since the early day, but that word applies, rightly, to the American marsupials, which naturalists term the true opossums. So it has been deemed advisable to drop a letter and call our furred tree-dwellers "Possums." Correctly speaking, they are Phalangers, but that word will never come into general use; and, after all, what is in a popular name? Remember that the only true opossums are native to North America, and continue to call our charming little ringtails and their kin, "possums," and all will be well.

They form a large family, especially if we admit the doubtfully distinct species and sub-species which have been described. Of ringtails alone, more than a score are known, the majority being native to New Guinea. Captain Cook's party obtained specimens of a ringtailed phalanger at Cooktown, in 1770, and the navigator himself called the little fur-bearers opossums — or possums, for in his *Journal* he forgot the O, or purposely omitted it. The entry, dated August 4, 1770, reads: "Here are Wolves, Possums, an animal like a ratt, and snakes." but (Sir) Joseph Banks gives the O in *his Journal*, writing on July 26, 1770: "While botanising to-day I had the good fortune to take an animal of the opossum (*Didelphis*) tribe; it was a female, and with it I took two young ones."

Two or three species of possums have suffered for being clad in beautiful fur. Their pelts have been marketed in millions during some years. More than 500,000 silver-greys were killed during one open season in Victoria. Happily, four years of protection followed this slaughter, which aroused the indignation of naturalists and nature lovers all over the Commonwealth. But Victoria is not the only State where wholesale destruction of fur-bearing animals has been permitted. Queensland has a bad record, even koalas having been killed there in vast numbers by fur trappers.

Any popular account of the possums should begin with the ringtails, for they are widely distributed in the Commonwealth, and New Guinea. More than a dozen Australian

species and sub-species are recognised. With a few exceptions, they are nocturnal in their habits, and live mostly in scrub-covered country, or gum tree forests; but some species inhabit the tropical rain-forests of the north, and are active during daylight as well as at night. There are, however, tropical ringtails with purely nocturnal habits, among them being the Herbert River ringtail (*Pseudochirus herbertensis*); and the lemur-like ringtail (*Pseudochirus lemuroides*), which inhabits palm scrubs and swampy areas in north-eastern Queensland. Several kinds of ringtails live chiefly among rocks, notably the woigoit or rock-haunting possum (*Pseudochirus dahli*), of the Northern Territory, which has a short tail hardly half the length of the animal's head and body.

Ringtailed possums have prehensile tails and slender bodies, and their fur is more or less woolly. Though nest building is not universal among them, it is a characteristic habit of ringtails. Generally, they are acrobatic little animals and make full use of the tail as a "third hand." Often they swing by the tail from a slender bough. Ringtails are vegetarians, feeding upon the foliage and flowers of many kinds of trees and shrubs. Those living in parks and gardens have an acquired taste for rosebuds and other flowers. In captivity ringtails will eat bananas, apples, and other fruit, nuts, dates, cake, sugared tea-leaves, etc.

The eastern ringtail (*Pseudochirus langinosus*), which ranges from southern Queensland to South Australia, is the most familiar and widely distributed species. The general colour of its soft, thick, woolly fur is slate-grey to grizzled grey, or rufous, above; some specimens are of a rich coppery-brown hue. The under surface generally is white, but may be either grey or cinnamon-tinged. Below, the tail is naked for a length of three or four inches. The Tasmanian ringtail (*Pseudochirus cooki*) has very dense, woolly fur of a dark smoky brown hue on the upper-surface of the body, while that of the under-parts is white. The Western ringtail (*Pseudochirus occidentalis*), of Western Australia, is smoky grey in colour. A dark grey ringtail is found in North Queensland — it ranges up to Cape York.

The remarkable scaly-tailed possum (*Wyulda squamicaudata*), of North-western Australia, is so rare that only one specimen has been collected; it was found among granite rock in the valley of the Violet River, Wyndham District.

In districts where the common or eastern ringtail abounds, its large oval-shaped nests are frequently seen, in silver wattles



(TOP) YELLOW FOOTED
ROCK-WALLABY

(BELOW) RAT-KANGAROOS

(AT RIGHT) AN OLD FELLOW





THE PADEMELO

After Gould

BENNETT'S WALLABY

After Gould



and other trees; sometimes in tea-tree scrub. These marsupial nurseries are formed of stems and twigs, leaves, strips of soft bark, and other material. Two is the usual number of young, but occasionally the eastern ringtail has a family of three to rear.

The vulpine or brushtailed possums are stoutly built animals, with dense and woolly fur. They are aboreal and possess strong, prehensile tails, naked below, at the tip. Brush-tails, which are less active than ringtailed possums, vary much in colour and in size. There are brown, black, and red forms of the silver-grey possum (*Trichosaurus vulpecula*), the trappers' principal victim: cream-coloured and white specimens are not rare. Tasmania's "black" possum is merely a colour variety of the silver-grey species; while a form with bright rufous fur on the upper portion of the body lives in dense bush in North Queensland.

The colour of the short-eared or mountain possum (*Trichosaurus caninus*) varies from grizzled grey to a beautiful amber-brown tint. On the sides of the body and the under-surface the fur is of a paler hue. As a rule, the general colour, above, is blackish-grey. Mountain possums inhabit the higher country in South Queensland, New South Wales, Victoria, and islands in Bass Strait. A variety inhabiting coastal brushes of southern Queensland and northern New South Wales, is uniformly black; but in some specimens the under-surface is whitish.

Leadbeater's possum (*Gymnobelideus leadbeateri*), if not extinct, is one of the rarest of all Australian marsupials. No living example of this long-tailed little phalanger has been seen for many years, though it has been often searched for by naturalists. Much of the country it inhabited has been cleared, but it may survive in some remote untamed spot. All but one of the few known specimens came from the Bass River Valley; but doubtless Leadbeater's possum ranged through the scrub country of eastern Victoria to Mount Wills. Some veteran rabbit trappers declare that they have seen the possum with a very long tail, broad for about half its length, and not brush-like at the end; but naturalists are doubtful whether *Gymnobelideus* will be re-discovered. All the extant specimens are in the National Museum, Melbourne. One of them was found, mounted, in a Melbourne business office; another, in a trapper's bundle of rabbit skins.

None of the other possums rivals in beauty the striped species (*Dactylopsila picata*), of North Queensland. Its thick,

woolly fur, on the upper parts of the body, is white, with three brownish-black longitudinal stripes; below, the fur is white or yellowish; on the chin, a black spot is conspicuous. The striped possum has a long, evenly bushy tail. Apparently this is a rare species, but it ranges from Cape York nearly to Cardwell, and may exist in some numbers in little-known localities. It has a shy disposition, and is nocturnal, which accounts for our scanty knowledge concerning its habits. Though only one member of the genus is found in Australia, many species of *Dactylopsila* occur in New Guinea and neighbouring islands. The first known one was found on the Aru Islands, by that great naturalist, Alfred Russell Wallace, co-discoverer, with Charles Darwin, of the theory of Natural Selection and the survival of the fittest.

Ringtails and brushtailed possums make charming pets, despite the fact that the night is their daytime. They are easily tamed, even without being taken into captivity. Thus many tame-wild possums live in city parks and gardens, also in large private gardens, both in town and country. The possums of Treasury Gardens and Fitzroy Gardens, Melbourne, have many human friends, who provide them with "fruit luncheons" in the evening. Some of the "guests" are so confiding that they will descend from the branches to accept an apple, a pear, or a banana. Hospital patients have made friends with silver-grey possums, encouraging them to enter the wards after dark, through windows purposely left open: a definite invitation to any possum on the prowl.

But the little fur-bearers are not always welcome guests — or lodgers. Often silver-greys take up residence in a house-roof, and make a noise at night by scampering among the rafters. Many people object to this, and seek permits from the Fisheries and Game Department, to capture the intruders for transfer to the bush, or to destroy them. Nature lovers are more tolerant, even though the possums do keep them awake when they would be sleeping. The author had several ringtails, for a season or two, in his suburban garden: they built a nest in a big lilly-pilly tree, and reared two young ones. Another nest was built on the crown of a tree-fern in the bush-house. The possums became tame enough to accept from the hand offerings of bananas and apples.

A silver-grey possum reared with a pet white rabbit formed a delightful friendship with bunny. The two in fact became animal "cobbers," and were unhappy when separated.



LUMHOLTZ TREE KANGAROO



RINGTAIL POSSUM'S NEST



WHERE WALLABIES ABOUND: NORTHERN TERRITORY BUSH

AN ALBINO WALLABY



They fed together and shared the same sleeping-quarters; they "played games" on the lawn and indoors. But they had at last to be parted. The possum when he grew up became troublesome in the house, breaking crockery and vases in his merry walkabouts. So he was returned to the bush whence he came as a "joey." For a while the white rabbit seemed to be disconsolate; then he forgot his lost friend, for animal memories are short, as a rule — a rule to which there are many exceptions. For instance, a tame fox, which had been deposited at the Zoo, recognised its owner when he visited the Gardens a year afterwards.

Dormouse-possums or possum-mice may not be rare, but they are rarely seen, and few specimens reach the museums. Usually these lovable little marsupials are found only when a tree, in which they have a nest, is felled, or blown down by the wind. They form a cosy nest of soft bark in a hole, or a deep cranny in a tree-trunk, perhaps in a large piped limb. Between sunrise and dusk they remain at home, dozing or sleeping through the daylight hours. Evening finds them awake and hungry, and they go food-hunting in tea-trees, honeysuckles or Banksias, gum trees, etc. Besides insects and nectar, probably they eat leaf buds and flower spikes. In captivity, dormouse-possums readily take honey-water and nibble daintily at soft cake.

During portion of the winter dormouse-possums hibernate, being the only Australian native animals (mammals) that are known to do so, with the exception of the platypus, which undergoes brief periods of winter dormancy. During the summer months the dormouse-possum conserves sustenance for cold weather—the time when it will be curled up snugly in its nest. Both tail and body become living larders, as it were; and from their stores of fat the tiny creature, no bigger than a pantry mouse, derives nourishment during the hibernation period.

There are several species of these pygmy possums, which have been described as mouse-like, but are much prettier than any mouse though they bear some resemblance to the little British rodent called dormouse. The common pygmy possum (*Dromicia nana*) is distributed over south-eastern Australia and Tasmania. Its very soft, woolly fur, above, varies in colour from fawn-grey to bright grey, that of the under-surface being of a much lighter hue. The lesser dormouse-possum (*Dromicia concinna*) inhabits South Australia and the Western State. Still another species (*Eudromicia lepida*) is found in Tasmania;

while the large-tailed form (*Dromicia macrura*) lives on the Atherton Tableland, North Queensland.

A rather rare little animal, the honey-mouse or honey-possum (*Tarsipes spenserae*), is the only living representative of the sub-family *Tarsipedinae*. Confined to South-western Australia, land of the numbat (*Myrmecobius fasciatus*), the honey-mouse, because of its diminutive size and nocturnal habits, seldom comes under observation; and the naturalist usually searches for it in vain. Cats, unfortunately, are successful collectors of honey-possums. Troughton mentions that when he was in their haunts, and had failed to capture even one with his tempting baits, a cat belonging to a resident of the district brought in more than twenty specimens.

Beautifully adapted for its mode of living, the honey-mouse lives chiefly among Banksias or honeysuckles, tea-tree (*Melaleuca*), and other trees and shrubs which produce abundantly flowers rich in nectar. The little creature's tongue is long and slender, with a "brush" of bristles on the upper surface, and is so protrusible that *Tarsipes* gets sustenance even from deep bell-shaped flowers. The lower lips are flanged on either side so that, when partly closed, the mouth forms a tube. Insects are eaten by the honey-mouse as well as nectar, and in the prettiest possible manner. Sitting up gracefully, the pygmy marsupial holds, say, a beetle in its forepaws and eats it daintily, rejecting the head, legs, and wings.

FLYING "SQUIRRELS" OR GLIDERS

Of course the small Australian animals popularly termed "flying squirrels" are in no way related to the true squirrels, which are rodents. The term adopted by Troughton, "gliders," suits the gliding possums admirably, for flight in the real meaning of the word is impossible for these charming little fur-bearers — acrobats of the gum trees. They have flaps with a flying membrane and glide or volplane through the air, leap from bough to bough, and are agile in all their movements. Their toe-pads enable them to move rapidly among foliage; while, possessing sharp claws, they cling easily to the bark of tree-boles, and are nimble climbers. Their food consists of insects, pollen, and nectar. They are nest builders, and chose home sites in hollow boles and boughs, frequently in holes in those big unsightly excrescences on gum trees.

The pygmy glider or flying phalanger (*Acrobates pygmaeus*) is a tiny grey-coloured animal, with beautiful soft, silky fur, white on the under-surface. The tail is fringed along both sides. Feather-tailed gliders of a genus closely related to that of the Australian species are found in New Guinea.

The four lesser flying possums or gliders, generally known as "flying squirrels" or "sugar squirrels," are charming in coats of soft fur. Dainty and graceful, they have beautiful eyes and look as harmless and innocent as you please. But the "sugar squirrel" can become a little fury: when handled it bites and screeches fiercely; and its bite, with chisel-sharp teeth, is painful. The anger notes sound like a wheezy alarm clock's main-spring running down. During the breeding season, winter-time, these curious sounds may be heard, succeeding a loud ringing screech. However, gliding possums usually are rather silent animals.

Born about midwinter, the young remain in the pouch for eight or nine weeks; then they are carried around for some time on their mother's back, and share in her aerial excursions.

The yellow-bellied glider (*Petaurus australis*), which measures 25 inches in length, the long, bushy tail accounting for about 13 inches, ranges from southern Victoria to North Queensland. Above, the fur of this species is brown; while

that of the under-surface is of a deep orange colour, except under the chin where it is blackish. Smallest of the four species, the short-headed or lesser flying phalanger (*Petaurus breviceps*) is 15 inches in total length, head and body measuring 7 inches. The "sugar squirrel," as it is generally called, ranges from the south-eastern border of South Australia through Victoria, New South Wales, and Queensland, and also occurs in the Northern Territory, being abundant on the Coburg Peninsula. It inhabits coastal and sub-coastal areas.

The squirrel flying phalanger or squirrel glider (*Petaurus sciureus*), which ranges from Victoria to Mackay, in North Queensland, has pale grey fur, with a dark-brown or blackish dorsal stripe. The head and body measure 10 inches, while the tail is one inch longer. The beautiful greater flying phalanger or possum-glider (*Petauroides volans*), distributed through eastern Australia from North Queensland to Victoria, is the largest of all the species: head and body measure about 17 inches, while the splendid cylindrical and bushy tails are about 20 inches in length. Like its allies, this glider is nocturnal in habits and lives among the branches of the tallest forest trees. During the mating season, its loud and startling call is a frequent voice of the night. The long, soft and silky fur of the possum-glider is dark grey to black above, white or yellowish on the lower surface of the body.



YOUNG RINGTAIL POSSUMS



SPOTTED CUSCUS



CLOSE-UP OF A
CUSCUS

THE CUSCUS

Many people believe that monkeys exist in North Australian wilds. The monkey stories told in the Territory mostly are based upon probability if not upon fact: a Jesuit priest at a mission in the Daly River district is said to have kept one or two monkeys from Java as pets. When the mission was abandoned, years ago, these animals may have escaped into the bush — or been liberated. But were they a pair? If so, in favourable conditions a monkey population possible could have become established; but there is no evidence that this did happen. Who has seen a wild monkey in Northern Australia?

The "monkey" of North Queensland is the spotted cuscus (*Phalanger maculatus*), found only in certain localities on Cape York Peninsula. A rare animal which probably never has been plentiful, owing mainly to the fact that aborigines regard the cuscus as excellent tucker. Specimens have been brought down alive to Cairns and Brisbane — one or two to Melbourne, in recent years; but now the "monkey," as it is often termed on the Peninsula, enjoys a fair measure of protection under game laws, and may long survive in its wild haunts.

Were the cuscus as familiar to Australians as the koala has been for many years, it would rival that charming little animal in popularity. But it has always been unfamiliar; rarely, if ever, a Zoo exhibit, while few people have seen the cuscus "at home," away up north on the Peninsula, which even today offers a field to the naturalist-explorer.

The spotted cuscus, on the upper portion of the body, is mottled black, white and reddish; the under-surface being white or yellowish-white. The prehensile tail is of a deep yellow colour; while the eyes are red. The fur is dense and woolly. Head and body measure about 26 inches; the tail is seven inches shorter. North Queensland's "monkey" somewhat resembles a sloth, with its small, rounded head, and its slow movements. A rather dull-looking animal, curled up among the foliage of a tree it dozes away the daylight hours, becoming active, in its own leisurely way, after twilight, when it feels like a meal. In captivity, the cuscus feeds contentedly upon pawpaws, bananas and gum leaves.

The spotted cuscus is not confined to Australia, but occurs also in New Guinea, where several species are found; others inhabit Celebes, Timor, and some Pacific islands.

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